WITK

The Spark Gap

April 1987

Book XII Vol IV

Official Journal of the Wellesley Amateur Radio Society

President's Message

by Tom Kinahan, N1CPE

What are your opinions on Public Service Communications? I've heard some conversations on this subject recently, as well as participated in some. What is your interpretation of the FCC rules and regulations regarding business communication on Amateur radio?

It seems to me that the FCC rules specifically state that if your communications benefit anybody monetarily, or are the regular business of the served agency whether or not they are non-profit, whether or not their sole purpose in being is to raise money whether or not its a good cause is undoubtedly against the law (except in an emergency). There are groups of amateurs that will take on the entire coordination of some worthy event, perform relays of timing of events, run logistics, and other specific tasks via amateur radio that seem to me to be the the direct business of the group sponsoring the event. There are some that will only handle emergency type communications along a race course and refuse to coordinate the entire event because of restrictions in FCC rules (I think our club fits in this category). Some will not do this at all (probably because they are fed up with hearing the arguments).

Who is right? I don't know. In the not too distant past, it was thought that entire coordination of large scale events, lets pick on the Boston Marathon for example, was accepted. At one time, W.A.R.S. was the communications coordinator of the Boston Marathon. It was accepted as an Amateur Radio event. We engaged in timing, logistics, and in fact, press feeds. Well, life changed some time back, the FCC decided to clamp down on this, and made a clear statement that it was unlawful to provide this service via amateur radio. We stopped. In fact some people enjoyed it so much that we actually took on doing that same stuff using commercial radio provided by the organizers. Life was again good. Does it bother you that amateurs are providing similar commercial services on amateur bands?

This is something that has been bothering me for some time now, but I don't see the solution. Yes, I enjoy doing some of those commercial things, but I'd like to think that I don't do them on amateur radio.

How should this affect the public service activities of the Wellesley Amateur Radio Society?

MEETINGS THIS MONTH:

April 2, 1987 at 7:30 P.M.
April 16, 1987 at 7:30 P.M.
211 Washington St., Wellesley

Let me know how you feel about this. Contact me at the club address, at home: 153 Milk St. #25, Westborough, Ma. 01581, snag me on the repeater, talk to my answering machine or talk to me directly at 898-2749, or even via packet radio as N1CPE at K1BC.

Amateur Satellites !

Paul Roemer, KG6LC will be our featured speaker on April 16th for a talk on Amateur Satellites. Invite your friends that aren't W.A.R.S. members because this will be a very interesting talk!

New Tickets

Peter Borner KA1PQY to Novice

Peter was a graduate of our recent Novice class. Congratulations to Peter and listen for him on the Novice bands.

FCC EXAM

There will be an FCC exam session at the Wellesley Red Cross on Saturday, MAY 2 at 10:00 AM. All exams, from Novice to Extra will be given. Please CONTACT Dan Brevik, KZ1D at 460-9059 AS SOON AS POSSIBLE. to book a spot. Space at the Red Cross building is limited, so we must severely limit walk-ins.

FCC EXAM

- DATE: May 2, 1987
- TIME: 10:00 AM
- PLACE: Wellesley Red Cross Building
- CONTACT: Dan Brevik, KZ1D 460-9059
- BRING :
  1. Completed Form 610
  2. Check for $4.35 payable ARRL VEC
  3. Copy Of Your Current Amateur License
  4. Original Amateur License
  5. Picture Identification (ie, driver's license)
  6. Pencils, Pen, Etc.

This may seem like a silly reminder, but please keep practicing your code and studying the theory. The best way to cure a case of examination-nerves is to know the material inside-and-out. Besides, we feel much better when people successfully upgrade ! (contin. p. 3)

Calendar ! Calendar !

- *April 2* : W.A.R.S. Meeting
- *April 13* : 144 MHz sprint
- *April 16* : W.A.R.S. Meeting - Paul Roemer, KG6LC on AMSAT
- *April 21* : 220 MHz sprint
- *April 29* : 432 MHz sprint
- *May 2* : FCC exam All Classes Wellesley Red Cross
- *June 13-15* : VHF contest
- *June 27-28* : Field Day
- *September* ** : FCC exam All Classes Wellesley Red Cross

The WARS volunteer examiners have had some degree of success in administering exams to handicapped people. If you have a friend who would like to upgrade, but has problems attending an exam session because of a special handicap, please contact Dan, KZ1D or Vern, ND1Z.

Perhaps you wish to upgrade, but May 2 is too soon. No problem! Our crystal-ball indicates that there will be an FCC exam session on September 19. So now there are no excuses. Plan to upgrade!

Repeater

Our repeater has been the subject of some malicious interference recently, as a result, the autodial codes will be disabled for an indefinite amount of time. Please ask for a control operator and s/he can help you if you have an emergency.

Novice Class Winding Down

Here is the list of folks in our class who have passed their Novice Exam as of this writing:

Peter Borner	Jonathan Cohen
Bruce DeDucca	Joe Fitzpatrick
Steve Garson	Steve Hershman
Leon Kaufman	Adam Mackler
Joel Sturman	Roger Tobin
Jim Topoli	John Tuckerman
Jim Whitlock	

This past Novice class was a pleasure to organize and teach, mostly due to the help and cooperation of the club members who gave us a hand. Frank, NG1I was instrumental to the success of this class. He spent much time and energy in teaching and motivating the students. Please thank Frank personally for his devotion and hard work.

A few words are in order about Joel Sturman. Most people find the Novice exam quite easy, since it is at an introductory level. Joel has certain handicaps that make even the Novice level a high hill to climb. He has been working for Novice for a number of years, so please join with me in congratulating Joel on his accomplishments.

The Novice class is certainly one of the most important club events. Not only do we help new folks into the hobby, but club members pitch-in to make it a team effort. If you feel strongly about the WARS education program, please consider taking on the Education Chairman(woman)-ship. It provides opportunities for personal growth in the areas of public speaking, organization, and technical presentation. If you would like to grow in these areas and learn how to become a leader, please talk with Tom, N1CPE or myself about this exciting opportunity.

73 es CUL

Vern, ND1Z

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The Spark Gap

Official Journal of the Wellesley Amateur Radio Society

Editor:

Jon Freeman

17 East Meadow Road

Lowell, Ma. 01854

The **Spark Gap** is a monthly publication of the Wellesley Amateur Radio Society, its sole purpose is to keep its members abreast of current happenings, FCC rule & regulation changes and to list equipment offered for sale or trade by members. Members are encouraged to contribute to the **Spark Gap** and may send their articles to the editor's address or to the club address. Items printed in the **Spark Gap** may be reprinted by other Amateur Radio publications provided the author and the **Spark Gap** are given credit.

The Wellesley Amateur Radio Society is a non-profit organization dedicated to the promotion of Amateur Radio through instruction, fellowship, demonstration and participation. Annual membership in the society is $10 and the club year runs from September 1 through August 31. Amateur Novice through Advanced classes are conducted regularly at no cost. To enroll in a class or gain information about the Society in general write :

The Wellesley Amateur Radio Society

211 Washington Street

Wellesley Hills Ma. 02181

New Members

This month we welcome the following new members to our club : Paul R. Viera of Cambridge (Waiting for call), Neil Grossman KA1PPG from Newton, Leon Kaufman (waiting for call) from Needham, Roger Tobin (waiting for call) from Upton, and Gerard Driscoll (KA1OOO) from Needham.

Novice Enhancement Weekend

By Tom Kinahan, N1CPE

The weekend of March 21-22 was deemed Novice Enhancement Weekend by the ARRL, as the new novice privileges went into effect. The idea was to get active on 10 meters, 220 MHz and 1200 MHz in order to welcome the novices. Well, to my observations it went quite well! I've never heard so much local activity on 10 meters before (I don't have the other bands). In fact, we were blessed with some propagation on 10 also!

Anybody have any stories about NEW? On some of the other bands?

So, Novices really do have tongues!

Let Us Know

When you upgrade or get a new call, drop us a line so that we can include this information in the *Spark Gap*.

Net!

Don't forget the WARS net on the 147.63/03 repeater at 8pm local Wednesday nights.

Renewing Your ARRL Membership

If you're renewing your ARRL membership, please send your completed membership form and your check made out to the Wellesley A.R.S. to the club at 211 Washington St. Wellesley, Ma. 02181. We will then forward this to the ARRL on your behalf. This way, we are able to make $2 from each renewal.

For Sale !

IC-2A 2m walkie($150), Azden PCS3000 2m mobile rig w/detachable head, 25w ($200), Midland synthesized 220 mobile rig ($260), IC-4AT 44MHz walkie ($200). All in original boxes with manuals, call Dick Paret, WA1ZLQ at 837-6423.

Computers And Amateur Radio

Part III: Purchasing Software

by Vern ND1Z

Apparently not many people have the time and energy to write their own sophisticated hobby software these days. There are many programs available for purchase and some are quite useful.

When a program is purchased, one can usually be sure that it has been tested and refined. Further, the author may have special knowledge and experience that enables him or her to choose the best algorithm for the program.

It may also be possible to find others who have purchased the same program. They could pass on advice on how to best run the program for optimum results or how to get around certain problems.

The primary advice for buying software is Caveat Emptor ('Buyer Beware'). Unfortunately it is too easy to buy programs that sound great in advertising, but either do not perform as expected, or worse, will not run at all on your computer. That is why the purchaser must do a little homework before spending some hard-earned cash.

The first and most obvious question is: 'Do I need this program?'. Evaluate the functions that the advertising claims. Back this up with the opinions of actual users. There are special clubs, newsletters, and nets that allow participants to share experiences. Try listening in to a computer net such as the Monday evening net on the Cranston, RI (147.6700/147.6100) repeater.

The second question is: 'Will this program work on my computer?'. Programs are written for specific computer systems. If run on a different type of system, the program may not run correctly. Ask the sales person if the software package that interests you is guaranteed for your system.

The third important question is: 'Will I be able to load or get this program into my system?'. The program will be stored on some medium. Programs are stored either on floppy disk, cartridge, or cassette tape. If you purchase a program that is written on a floppy disk and you do not have a disk drive, you will be in trouble.

The fourth question that is sometimes not asked is: 'What special hardware is needed to run the program?'. Some programs assume that the computer system has certain hardware options such as extra memory or a second disk drive. Communications software in particular, might require the purchase of a modem for converting digital data to analog signals for transmission on telephone lines or amateur radio bands.

There are also a few considerations that although not critical, may affect your satisfaction. Ease of use is quite important. Are the operation procedures smooth and sensible, or does the program require you to bend over backwards just to perform simple operations? Here, experiences of others are helpful.

The speed of program execution is another important parameter. In general, programs that have been written in assembly language run much faster than those written in a higher language such as BASIC. Some speed problems can actually be traced back to the design of the program. Programs that go through lengthy processing to determine certain facts will run slower than those that make a few intelligent assumptions. Waiting several seconds for a computer to process an action can be most

frustrating.

When in doubt, read the instructions. That old motto is true for software, provided that there are instructions to read. Every software package should contain a useful instruction booklet. (Known in the computer industry as 'the documentation') The instructions should clearly describe the procedures for running the program and the expected results. There should be an entire section that lists the error messages and what they actually mean. After reading the booklet, you should feel confident about using the product. Some programs do not have instruction booklets. Instead they may be a 'Help' command or file with an abbreviated version of the instructions. Help services are useful, but should not be considered adequate on their own.

Many software companies will ship new versions of the program for a fee. These new versions will contain problem fixes or new features. Ask the sales person if updates can be purchased at a discount rate.

So where does one purchase software? There are many sources and generally (but not always) you get what you pay for. Some programs are available for free, either from friends or computer clubs. Frequently an individual will write a program and be happy to pass it on to friends. There are books that can be purchased listing many interesting programs. This option is less expensive than purchasing a program separately, but the user must type the source lines into the system and perhaps correct problems introduced in that process. Finally, one may buy software from amateur radio outlets (such as the mail order stores).

A word is in order about copyrighting. If you buy a program for, say $ 50, and make a duplicate copy to give or sell to someone else (say, for $ 5), then you are in violation of the copyright laws. Most programs are copy-protected, but some are not. If you find that it is possible to make a complete copy of a purchased program, consider that making illegal copies amounts to stealing someone's work. Enough said.

After the floppy disk (or cassette, or cartridge) arrives, resist the temptation to try it out. Instead, sit down, relax, and spend time with the instruction booklet. Read through the instructions until you have a good sense of how to operate the program.

Now is the time to 'play' with the program. Exercise all the options and make sure it works the way you expect. Make notes about items that are either confusing or look like problems. You will want to compare these notes with those of your friends on the computer net.

Below is a list of some of the current amateur radio software available. It is not a complete list. This author does not own nor endorse any of these packages. Perhaps some of our readers do have experiences with these programs and would like to share them in the Spark Gap.

Program Name	Purpose	Publisher
Contest Log	CoGen	
Super Duper	contest log duplicator	CoGen
Universal Log	general log	CoGen
DX Edge	MUF & great circle bearings	CoGen

Program Name	Purpose	Publisher
Morse Univ.	CW training for Comm-64	AEA
Codeprac	CW training for IBM PC	???
Prop. Chart	MUF	NN4U
Super Log	general logging	NN4U
Contest Log	contest logging	NN4U
Master Log	general logging	NN4U
DX Toolkit	beam headings	NN4U
Antenna Design		NN4U
LADPAC	ladder circuit analysis	NN4U
RF Notes	circuit design	W6MDI
RF-CAD	circuit design	W1JR/WA1GRC
Data Base	loggings awards grids	N6NB/KC6A
Lat/Long	beam headings greyline	N6NB/KC6A
Contest/Dup		N6NB/KC6A
Antenna	imped. match phased vert.	N6NB/KC6A
EME	moon tracker	N6NB/KC6A

There are many software packages to choose from and prices range from $ 19.95 for the N6NB/KC6A software to $ 200 for some of the W6MDI programs. Good luck, have fun, and Caveat Emptor!

Adventures of Mountaintopping

By Tom Kinahan, N1CPE

Mountaintopping is a pastime many Hams enjoy because they like to discover how far away you can talk with somebody. The mountain is there as a substitute for a many thousand foot tower. As a member of the W1TKZ Mt. Equinox expeditions of the past few years, I'd like to share some of our experiences with you. As you may know, the reason we travel to the Mountains of Vermont is for the June and September VHF contests and sometimes the August UHF contests. Our crew has been pretty successful up on the 'hill'. We've managed to pull out a number of top ten efforts from up there, with our best being third place nationally. I really enjoy going up to Mt. Equinox because it gets me away from my normal surroundings and off to unusual propagation and an adventure at each turn.

Over the past few years, the winners of these contests have typically come from the eastern seaboard and from the northeast specifically. Just to our south, about 30 miles away, we can see Mt. Greylock in Massachusetts where W2SZ/1, the most successful and most elaborate VHF station around, is set up for these contests. These folks go for this VHF stuff BIG time. I've seen some pictures and heard first hand reports that they run some awfully impressive antennas and power.

Since we can see them, we've often been asked if we can see the RF corona off Mt. Greylock. We can't, but we sure can hear the RF.

Mt. Equinox's elevation is 3848 ft. The rest of south western Vermont, in addition to being in the middle of some of the most spectacular mountain scenery in the world, is an excellent VHF location.

Our Mt Equinox VHF ground wave covers an area including the Boston area, NY City, Toronto and Montreal. Not being a real traveler myself, I'm really surprised at how well places like Pennsylvania, New Jersey, and Ohio come in up there or how close they are because they are on the edge of our radio line-of-sight.

Our stations on Equinox usually consist of tents or vans with usually 2 stations each and 4 to 5 towers set up on the morning before the contest. Typically, we're running a Kilowatt on 6m, 2m and about 500 to 600 watts out on 220 and 430 MHZ. Above that, the microwave bands at 902, 1296 and 2304 MHZ generally run in the area of 1 to 60 watts out.

All QSO's that we make with the exception of 10GHz are made on SSB or CW. We don't operate FM because of its restricted range and fading characteristics.

Six Meters

We've found that six meters can be a really wild band. With no sunspots around to give us serious skip, we settle for occasional tropo ducts into Florida and the rest of the south. Recently, we got some nice E-Skip in June 86 that proved to liven things up. We were able to plot the areas we were working on a map and could clearly see the single hops to the midwest and double hops to the west coast.

If you want to get up before the sun does, you can always work some meteor scatter. There are more meteors colliding with the earth's atmosphere at dawn because the part of the Earth that is presently at dawn is at the Earth's leading edge of its path around the Sun. Working MS isn't bad if you're quick. A meteor midway between you and the station you are working could be there anywhere from a split second to 10 or 15 seconds. Signals are weak, and you have to be fast. In fact, you can hook up with more than one meteor to complete your QSO with a little luck.

Two Meters

Two meters is by far where most of your contacts are. When there's no tropo enhancements, you generally work the line of sight area mentioned above. But with some help, tropo QSO's are possible up to 1000 miles away (Florida). Meteor showers help 2m propagation too.

220 MHz

The next band up is 220 MHz. Its propagation is similar to 2m ground wave, but far fewer enhancements happen up here. The drawback of this band is that there is no commercially available equipment here for SSB and CW, so if you want to operate 220, you have to build it yourself.

432 MHz

This band is pretty popular, especially with the satellite folks because they already have commercially available rigs for this band. There

are usually more contacts here than 220 because of the availability of rigs, but its line of sight is shorter than the other bands.

902 MHz

This band will only get more populated. As of now, it has been available to hams in this country for almost 2 years. There's no commercial equipment for hams up here yet, partially because the bandplan is a little mixed up, but the ardent VHFers have built 902 rigs. Up here, a half wavelength gets real small, to the point where *lots* of elements become practical. The one time we operated this band so far, we used a loop yagi with about 15 elements. Our farthest QSO here is over to K3YTL in Pennsylvania over a path of about 200 miles (I didn't think Pennsylvania was that close, but it is).

1296 MHz

This band is similar to 902 both in frequency and propagation. It does have the advantage, though, that there are commercial radios available for this band. 100 watt amps are not uncommon for 1296. If my memory serves me right, We've worked westerly into Ohio and southerly into the Carolinas (New England and Montreal are still line of sight). Up here, if you're in a valley, it's no use trying. You've got to have line of sight on this frequency.

10 GigaHertz or 10,000 MegaHertz

Up here the preferred mode is full duplex FM. This is because the easiest way to get some RF on these frequencies is to use a GUNN diode oscillator. I won't get technical, but you'll have to take my word for it when I say this is neat! (Check out the 10 GHz station at the club). We've used this system transmitting with a few Milliwatts and talked with stations as far away as K1TR at Mt. Wachusett in Princeton, Massachusetts.

Aurora

When you get an aurora, all the VHF bands go crazy. It affects lower frequencies first, but for a real nice one, it will travel up to 432 MHz. Aurora signals are reflected off an ionized cloud over an area which is usually to the north. At times you've probably seen a visible aurora, which is also called the Northern Lights. It is possible to have a radio aurora and not a visible one.

My very first VHF contest had a real nice aurora, unfortunately, I had to leave the mountaintop at about 7pm and the contest lasted until 10pm. Some time before the end of the contest, the signals started exhibiting the telltale aurora sounds. A number of the remaining operators were able look away from some exciting radio propagation to gaze at the aurora to the north. At some point, I understand, they had to convince themselves that they were there for another purpose and they returned to the radios to complete some nice QSO's.

Aurora signals have a sound unlike anything you've heard before. I can't really put it into words, but some knowledge of whats going on will help understand it. When a solar flare occurs at the Sun, some of the 'stuff' that is released into space hits the Earth and collects at the poles. These curtains of solar debris move at very fast rates causing doppler shift on reflected signals. Using SSB is difficult for this reason, and CW is used during this mode of propagation. Aurora communications generally yield contacts

into Michigan and the Dakotas from Vermont. Aurora is best at lower VHF frequencies.

The Hill Climb

The June trips to Mt. Equinox usually coincide with an event called the Mt. Equinox Hill Climb. The Vintage Sports Car Club of America runs a race up the 5 mile mountain road during the weekend of the contest. Many of us do a little public service communication for the race as well as contesting.

These antique autos hit speeds of up to 80 mph between the hairpin turns with few if any casualties, either automotive or human.

You've got to be confident that your car is in peak condition to climb the Mt Equinox road to the summit. Cars with marginal brakes and transmissions are not to be trusted here.

Weather

Fortunately, bad weather usually gives some amount of warning up there. As with most mountaintops, the weather doesn't usually want to cooperate when you really want it to. September '86 showed us snow flurries and nighttime temperatures in the 20's at night, and a few June expeditions showed us vivid lightning displays. The question is, what do you do when the thunderstorm approaches and you're operating six meters from a 3800 foot mountain? The correct answer is shut everything off, try to unplug the antennas, and run for shelter. Fortunately, the Equinox Skyline Inn is only a mere 100 yards from our operating position. How fast can you do a 100 yd dash? I've never seen a thunder and lightning storm while operating up there, But one Monday morning just before taking it all down, it did get pretty nasty.

Many times the clouds overtake the mountaintop and you live in a thick pea soup. This does little more than cut down visibility and cause condensation on equipment.

But quite often, the views are absolutely breathtaking. One of the most important items that one must take is suntan lotion. The Sun's rays get awfully intense at that altitude during a day's contesting.

Clear nights on Mt. Equinox let you see an unbelievable light show in the sky. The Milky-Way and billions of stars and planets can be seen with just the naked eye. I caught my first glimpse of Saturn's rings through KA1IU's telescope on Mt. Equinox. I really can't describe what the sky looks like, just let me say, I could spend a whole night staring at the sky instead of contesting. (But I don't)

The Equinox Sky Line Inn

When we go up, those who don't camp out, make reservations at the inn for the duration. Their fine cuisine, and the bar all add to the attraction of the hill. The Innkeeper, Dr. Rudd, is always ready to tell a few good stories about life on the mountain over a few pops.

The nearby town of Manchester has typical Vermont charm. It is located near major ski areas and has an abundance of country inns, restaurants, and shopping. Tourists flock to Manchester in the summer to visit the Robert Todd Lincoln estate, the Orvis fishing tackle factory and fly casting school, drive to the top of Equinox, and watch people hang gliding from the mountain and soaring over the valley. (continued)

Moutaintopping, contin.

This is Mt. Equinox

I hope that I've given you some idea of what these contests from the hill are like, and I hope you'll consider coming along for some. For some real pictures of the mountain and to get an idea of what goes on, and what the place looks like, I have a VHS format Videotape that I took during the 1986 contests. I don't promise broadcast quality camera work, it isn't. But it does show some of why we keep going back up to Mt. Equinox.

See you on the hill!